CLAIMS

1) A catalytic composition comprising a beta zeolite, a metal of group VIII, a metal of group VI B and optionally one or more oxides as carrier.

2) The catalytic composition according to claim 1, wherein the beta zeolite is in the form in which the cationic sites of the zeolite are prevalently occupied by hydrogen ions.

3) The catalytic composition according to claim 2, wherein at least 80% of the cationic sites is occupied by hydrogen ions.

4) The catalytic composition according to claim 1 containing beta zeolite, a metal of group VI B and a metal of group VIII, wherein said zeolite is present in a quantity ranging from 70 to 90% by weight.

5) The catalytic composition according to claim 1 containing beta zeolite, a metal of group VI B and a metal of group VIII and one or more metal oxides, wherein said zeolite is present in a quantity ranging from 5 to 30% by weight with respect to the total weight of the catalyst.

6) The catalytic composition according to claim 1, wherein the metal of group VIII is selected from Cobalt and Nickel.

7) The catalytic composition according to claim 1, wherein the metal of group VI B is selected from molybdenum and tungsten.

8) The catalytic composition according to claims 6 and 7,

wherein the metal of group VI B is Mo and the metal of group VIII is Co.

9) The catalytic composition according to claim 1, wherein the weight percentage of the metal of group VIII varies from 1 to 10% with respect to the total weight of the catalyst.

10) The catalytic composition according to claim 9, wherein the weight percentage of the metal of group VIII varies from 2 to 6% with respect to the total weight of the catalyst.

11) The catalytic composition according to claim 1, wherein the weight percentage of the metal of group VI B varies from 4 to 20% with respect to the total weight of the catalyst.

12) The catalytic composition according to claim 11, wherein the weight percentage of the metal of group VI B varies from 7 to 13%.

13) The catalytic composition according to claim 1, wherein the molar ratio between the metal of group VIII and the metal of group VI B is less than or equal to 2.

14) The catalytic composition according to claim 13, wherein the molar ratio between the metal of group VIII and the metal of group VI B is less than or equal to 1.

15) The catalytic composition according to claim 1, wherein the oxide or oxides used as carrier are oxides of

an element Z selected from silicon, aluminum, titanium, zirconium and mixtures of these.

16) The catalytic composition according to claim 15, wherein the oxide is selected from alumina or alumina mixed with an oxide selected from silica and zirconia.

17) A process for the preparation of the catalytic compositions according to claim 1, containing beta zeolite, a metal of group VI B and a metal of group VIII by impregnation of the beta zeolite with a solution containing a salt of a metal of group VI B and a salt of a metal of group VIII, drying and calcination.

18) A process for the preparation of the catalytic compositions according to claim 1, containing beta zeolite, a metal of group VI B and a metal of group VIII, comprising the impregnation of the zeolite with a solution containing a salt of a metal of group VI B and with a solution of a salt of a metal of group VIII, drying and calcination.

19) A process for the preparation of the catalytic compositions according to claim 1, containing beta zeolite, a metal of group VI B, a metal of group VIII and one or more oxides as carrier, comprising mixing the zeolite with the oxide, extrusion, calcination, an optional exchange process which reduces the sodium content, drying, impregnation with a solution containing a salt of a metal of group VI B, drying, calcination, impregnation with a solution of a salt of

a metal of group VIII, drying and calcination.

20) A process for the preparation of the catalytic compositions according to claim 1, containing beta zeolite, a metal of group VI B, a metal of group VIII and one or more oxides as carrier, by means of the sol-gel technique as follows:

a) an alcoholic dispersion is prepared, containing a soluble salt of the metal of group VIII, beta zeolite and one or more organic compounds capable of generating the supporting oxide or oxides;

b) an aqueous solution is prepared containing a soluble salt of the metal of group VI B and, optionally, tetraalkylammonium hydroxide having the formula R_4NOH;

c) the alcoholic dispersion and the aqueous dispersion are mixed and a gel is obtained;

d) aging of the gel at a temperature ranging from 10 to 40°C;

e) drying of the gel;

f) calcination of the gel.

21) A process for the preparation of the catalytic compositions according to claim 1, containing beta zeolite, a metal of group VI B, a metal of group VIII and one or more oxides as carrier, as follows:

a) an alcoholic dispersion is prepared, containing beta zeolite and one or more organic compounds capable of gener-

ating the supporting oxide or oxides;

b) an aqueous solution is prepared containing tetraalkylammonium hydroxide having the formula R_4NOH;

c) the alcoholic dispersion and the aqueous solution are mixed and a gel is obtained;

d) aging of the gel at a temperature ranging from 10 to 40°C;

e) drying of the gel;

f) calcination of the gel;

g) impregnation of the calcined product with a solution containing a salt of a metal of group VI B, drying, calcination and impregnation with a solution of a salt of a metal of group VIII, drying and calcination.

22) A process for the preparation of the catalytic compositions according to claim 1, containing beta zeolite, a metal of group VI B, a metal of group VIII and one or more oxides as follows:

a) an alcoholic dispersion is prepared, containing a soluble salt of the metal of group VIII and one or more organic compounds capable of generating the supporting oxide or oxides;

b) an aqueous solution is prepared containing a soluble salt of the metal of group VI B and, optionally, tetraalkylammonium hydroxide having the formula R_4NOH;

c) the alcoholic dispersion and the aqueous dispersion

are mixed and a gel is obtained;

d) aging of the gel at a temperature ranging from 10 to 40°C;

e) drying of the gel;

f) mechanical mixing of the dried product with beta zeolite;

g) calcination.

23) The process according to claim 20, 21 or 22, wherein the salt of the metal of group VIII is nitrate.

24) The process according to claim 20, 21 or 22, wherein the organic compound capable of generating the oxide is the corresponding alkoxide in which the alkoxide substituents have the formula (R'O)- wherein R' is an alkyl containing from 2 to 6 carbon atoms.

25) The process according to claim 24, wherein the alkoxide of an element Z selected from silicon, aluminum, titanium, zirconium and their mixtures, is used.

26) The process according to claim 24 and 25, wherein a tri alkoxide is used, having the formula $(R'O)_3Al$, wherein R'is isopropyl or sec-butyl.

27) The process according to claim 24 and 25, wherein a trialkoxide is used, having the formula $(R'O)_4Si$ wherein R'is ethyl.

28) The process according to claim 24 and 25, wherein a trialkoxide is used, having the formula $(R'O)_4Zr$ wherein

R' is isopropyl.

29) The process according to claim 20, 21 or 22 wherein the soluble salt of the metal of group VI B is an ammonium salt.

30) The process according to claim 20, 21 or 22 wherein the tetraalkylammonium hydroxide has the formula R_4NOH wherein R is an alkyl group containing from 2 to 7 carbon atoms.

31) A process for the preparation of the catalytic compositions according to claim 1 containing beta zeolite, a metal of group VI B, a metal of group VIII and one or more oxides as carrier, comprising:

a) impregnation of the oxide carrier with a salt of a metal of group VI B and a salt of a metal of group VIII,

b) drying and calcination of the material obtained in step a),

c) mixing of the impregnated oxide obtained in step b) with the beta zeolite.

32) Hydrotreating of hydrocarbon mixtures characterized by the use of a catalytic composition which comprises a beta zeolite, a metal of group VIII, a metal of group VI B, and optionally one or more oxides as carrier.

33) The process according to claim 32 for the hydrodesulfuration of hydrocarbon mixtures having boiling ranges within the range of about 35° to about 250°C, containing olefins

and at least 150 ppm of sulfur, with the contemporaneous skeleton isomerization of these olefins, which comprises putting these mixtures in contact, in the presence of hydrogen, with a catalytic composition which comprises a beta zeolite, a metal of group VIII, a metal of group VI B, and optionally one or more oxides as carrier.

34) The process according to claim 33, carried out in the presence of a catalytic composition containing a beta zeolite, a metal of group VI B, a metal of group VIII, at a temperature ranging from 220 to 360°C, at a pressure ranging from 5 to 20 kg/cm^2, at a WHSV ranging from 1 to 10 h^{-1}, with a quantity of hydrogen ranging from 100 to 500 times the quantity of hydrocarbons present (Nl/l).

35) The process according to claim 34 carried out at a temperature ranging from 300 to 350°C.

36) The process according to claim 33 carried out in the presence of a catalytic composition containing a beta zeolite, a metal of group VI B, a metal of group VIII, one or more oxides as carrier, at a temperature ranging from 220 to 320°C, at a pressure ranging from 5 to 20 kg/cm^2, at a WHSV ranging from 1 to 10 h^{-1}, with a quantity of hydrogen ranging from 100 to 500 times the quantity of hydrocarbons present (Nl/l).

37) The process according to claim 36 carried out at a temperature ranging from 250 to 300°C.

38) The process according to claim 33, wherein the hydrocarbon mixture which is subjected to desulfuration contains more than 600 ppm of sulfur.

39) The process according to claim 33 carried out in a reactor in which the catalytic composition is divided into two beds, the first containing beta zeolite, the second containing a metal of group VI B, a metal of group VIII and one or more oxides as carrier.

40) The process according to claim 33, wherein the hydrocarbon mixtures which are subjected to hydrodesulfuration have boiling ranges within the range of C_5 to about 220°C.

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